ABSTRACT OF THE DISCLOSURE

The object of the present invention is to make possible generation of high-density plasma even in the center of a plasma generation region. A plasma generation apparatus comprises a vacuum vessel 11, gas induction unit 12, exhaust unit 13, cylindrical discharge electrode 14, high-frequency oscillators 19 and 21, ring-shaped permanent magnets 15 and 16, and two disk-shaped walls 17 and 18. The discharge electrode 14 is fashioned so as to enclose a plasma generation region 41. The permanent magnets 15 and 16 form prescribed magnetic force lines. These magnetic force lines have portions that are roughly parallel to the center axis 42 of the discharge electrode 14, the lengths of which parallel portions become longer as the magnetic force lines approach the center axis 42. The two walls 17 and 18 define the scope of the plasma generation region 41 in the dimension of the center axis 42 of the discharge electrode 14. These two walls 17 and 18 are positioned so as to sandwich therebetween the plasma generation region 41 in the dimension of the center axis 42. The plasma generation apparatus is also configured so that the magnetic force lines 43 passing through the center of the plasma generation 41 are shaped so that they do not intersect the two walls 17 and 18.